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(54)Title: NOVEL PROTEINS AND DNAs THEREOF

(54)発明の名称: 新規タンパク質およびそのDNA

(57)Abstract: A novel sodium-dependent bile acid transporter protein, an Na⁺/H⁺ exchange transporter protein, a P-type ATPase protein and a vanilloid receptor protein and polynucleotides encoding these proteins are useful in screening preventives/remedies for hyperlipemia, arteriosclerosis, genital diseases or digestive diseases; respiratory diseases, renal diseases or digestive diseases; pancreatic diseases, central nerve diseases, digestive diseases or respiratory diseases; inflammatory diseases, rheumatoid diseases or diabetic neurosis; etc.

(57)要約:

本発明の新規なナトリウム依存性胆汁酸トランスポータタンパク質、Na⁺/H⁺交換輸送体タンパク質、P型ATPaseタンパク質ならびにバニロイド受容体タンパク質、これらのタンパク質をコードするポリヌクレオチドなどは、高脂血症、動脈硬化、生殖器疾患または消化器疾患；呼吸器疾患、腎疾患または消化器疾患；膵臓疾患、中枢神経系疾患、消化器疾患または呼吸器疾患；炎症性疾患、リウマチ性疾患または糖尿病性神経症などの予防・治療剤のスクリーニングに有用である。

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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP03/00311

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C07K14/47, 16/18, C12N15/12, 15/63, 5/10, A61K38/00,
39/00, 48/00, G01N33/53, C12P21/02, 21/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C07K14/47, 16/18, C12N15/12, 15/63, 5/10, A61K38/00,
39/00, 48/00, G01N33/53, C12P21/02, 21/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

SwissProt/PIR/GeneSeq, Genbank/EMBL/DDBJ/GeneSeq, MEDLINE (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KAWAI, J. et al., Functional annotation of a full-length mouse cDNA collection. Nature, 08 February, 2001 (08.02.01), Vol.409, No.6821, pages 685 to 690, Database GenBank Accession No.AK018423	1-20,23-24
· P, X	WO 02/33087 A2 (CURAGEN CORP.), 25 April, 2002 (25.04.02), & AU 200216637 A	1-20,23-24
P, X	WO 02/072774 A2 (LEXICON GENETICS INC.), 19 September, 2002 (19.09.02), & US 2002/164327 A1	1-20,23-24
· P, X	WO 02/077237 A2 (INCYTE GENOMICS, INC.), 03 October, 2002 (03.10.02), (Family: none)	1-20,23-24

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	
"A"	document defining the general state of the art which is not considered to be of particular relevance
"E"	earlier document but published on or after the international filing date
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed
"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search 22 April, 2003 (22.04.03)	Date of mailing of the international search report 13 May, 2003 (13.05.03)
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Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/00311

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/04520 A2 (INCYTE GENOMICS, INC.), 17 January, 2002 (17.01.02), & AU 200173239 A	30-47, 50-51
X	Orlowski J. et al., Molecular cloning of putative members of the Na/H exchanger gene family. cDNA cloning, deduced amino acid sequence, and mRNA tissue expression of the rat Na/H exchanger NHE-1 and two structurally related proteins. J.Biol.Chem., 05 May, 1992 (05.05.92), Vol.267, No.13, p.9331-9	30-47, 50-51
P,X	WO 02/10216 A2 (CURAGEN CORP.), 07 February, 2002 (07.02.02), & US 2003/064369. A1	30-47, 50-51
X	Halleck MS. et al., Differential expression of putative trans bilayer amphipath transporters. Physiol Genomics, 11 November, 1999 (11.11.99), Vol.1, No.3, p.139-50	57-74, 77-78
P,X	EP 1225182 A2 (Millennium Pharmaceuticals, Inc.), 24 July, 2002 (24.07.02), & US 2002-119523 A1	57-74, 77-78
P,X	WO 02/101045 A2 (NOVARTIS AG & IRM LLC), 19 December, 2002 (19.12.02), (Family: none)	57-74, 77-78
X	WO 02/00722 A2 (Millennium Pharmaceuticals, Inc.), 03 January, 2002 (03.01.02), & US 2002/156253 A1 & EP 1294762 A2	84-101, 104-105, 108-110
P,X	WO 02/12340 A2 (INCYTE GENOMICS, INC.), 14 February, 2002 (14.02.02), & AU 200180981 A	84-101, 104-105, 108-110
P,X	WO 02/44210 A2 (BRISTOL-MYERS SQUIBB CO.), 06 June, 2002 (06.06.02), & US 2003/027164 A1	84-101, 104-105, 108-110
P,X	GB 2372993 A (SMITHKLINE BEECHAM CORP & SMITHKLINE BEECHAM PLC), 11 September, 2002 (11.09.02), & US 2003/027232 A1	84-101, 104-105, 108-110

INTERNATIONAL SEARCH REPORT

Internal Application No.

PCT/JP03/00311

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: 28, 55, 82, 114

because they relate to subject matter not required to be searched by this Authority, namely:

Claims 28, 55, 82 and 114 pertain to methods for treatment of the human body by therapy and thus relate to a subject matter which this International Searching Authority is not required, under the provisions of Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.

2. Claims Nos.: (the following A)

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

(A) Claims 21-22, 25-27, 29, 48-49, 52-54, 56, 75-76, 79-81, 83, 102-103, 106-107, 111-113 and 115.

(B) See extra sheet.

3. Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1 to 29 relate to a novel sodium-dependent bile acid transporter protein, claims 30 to 56 relate to a novel Na^+/H^+ exchange transporter protein, claims 57 to 83 relate to a novel P-type ATPase and claims 84 to 115 relate to a novel vanilloid receptor protein. At the point of the application of the present case, various sodium-dependent bile acid transporter proteins, Na^+/H^+ exchange transporter proteins, P-type ATPases and vanilloid receptor proteins were already known in public and these claims are not considered as having a special technical feature in common. Such being the case, these inventions are not considered as relating to a group of inventions so linked as to form a single general inventive concept.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/00311

Continuation of Box No.I-2 of continuation of first sheet(1)

The compounds as set forth in claims (1) (21, 25, 29, 48, 52, 56, 75, 79, 83, 102, 106, 111 and 115) and the medicinal compositions as set forth in claims (2) (22, 26-27, 49, 53-54, 76, 80-81, 83, 103, 107 and 112-113) are specified by "the screening methods as set forth in claims (18, 23, 46, 50, 73, 77, 100, 104 and 109) and, therefore, involve any compounds and medicinal compositions obtained by the screening methods.

However, the description presents neither any specific compounds nor medicinal compositions obtained by the screening methods. Therefore, the claims (1) and (2) are neither disclosed in the meaning as described in PCT Article 5 nor supported by the description in the meaning as described in PCT Article 6. Even though the common technical knowledge at the point of the application is considered, it is completely unknown what specific compounds are involved therein and what are not. Thus, the above claims are described in an extremely unclear manner and fail to fulfill the requirement of clearness as described in PCT Article 6.

Such being the case, no meaningful search can be made on the inventions as set forth in the above claims.